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Abstract

A Numerical Simulation of the Bay of Bengal Western Boundary Current

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The seasonal and interannual variability of the Bay of Bengal Western Boundary Current are examined using a one-active layer, primitive equation, reduced-gravity model of the entire Indian Ocean north of 30° South. The model is forced by the Hellerman and Rosenstein wind stress climatology as well as mean monthly wind stress values derived from the National Meteorological Center 1000 mb forecast winds for the period 1981-1987. The numerical simulations yield a seasonally reversing western boundary current in the Bay of Bengal with maximum northward transport in February and southward transport from June to October. The simulation forced by the NMC winds from 1981 to 1987 yields a maximum wintertime transport in February, 1985 which coincides with the only period for which Legeckis (1987) was able to observe the current from NOAA satellite IR imagery. The numerical results show that the Bay of Bengal Western Boundary Current is primarily forced by the wind stress curl. The relationship between the flow off the east coast of Sri Lanka and the western boundary current to the north is also examined.

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